UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,708	04/27/2005	Eisuke Sasaoka	050212-0646	8757

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MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER
LEPISTO, RYAN A

ART UNIT	PAPER NUMBER
2883	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/532,708	SASAOKA ET AL.
	Examiner	Art Unit	
	Ryan Lepisto	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>26 June 2007</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-49</u> is/are pending in the application.

    4a) Of the above claim(s) <u>1-17,19 and 20</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>18,21-27 and 29-49</u> is/are rejected.

7)☒ Claim(s) <u>28</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>27 April 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-SB/08) Paper No(s)/Mail Date <u>6/26/07, 7/11/07</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06) Office Action Summary Part of Paper No./Mail Date 20070719

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Jameson et al (US 6,301,426 B1).

Jameson teaches a standard single-mode silica fiber from Corning having a core

surrounded by a cladding wherein attenuation is low (< 0.4 dB/km) at 1310 nm and the

mode field diameter at the same wavelength is 9.3 +/- 0.5 μm (column 2 lines 61-63,

column 3 lines 1-7).

Jameson does not teach expressly an exact range of transmission loss of

between 0.28 to 0.32 dB/km at 1310 nm.

Jameson teaches attenuation below 0.4 dB/km as previously discussed.

At the time the invention was made, it would obvious to a person of ordinary skill

in the art to achieve low transmission ranges. Applicant has not disclosed that an exact

range of 0.28 to 0.32 dB/km provides an advantage, is used for a particular purpose, or

solves a stated problem. One of ordinary skill in the art, furthermore, would have

expected Applicant's invention to perform equally well with the fiber taught by Jameson

because of the low transmission taught that overlaps applicant's claimed range.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been reduce the need for amplifiers and/or repeaters along the transmission line by being able to reduce losses in the line.

Claim 21-27, 30-37, 40-43, 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bickham et al (US 2003/0174988 A1)** (Bickham).

Bickham teaches a silica glass optical fiber having a core (not containing germania, paragraph 0095)) and cladding have the following properties: a transmission loss at 1380 nm is preferably less than about 0.4 dB/km (paragraph 0017), a

transmission loss at 1310 nm being the same as the attenuation at 1380 nm or within

0.05 dB/km the transmission loss at 1380 nm or the transmission loss at 1380 is lower

than the transmission loss at 1310 nm (paragraph 0017), a mode field diameter at 1310

nm of 6.5 to 6.7 μm (Table 2), a chromatic dispersion at 1550 nm between 5 and 9

ps/nm/km (paragraph 0010), a dispersion slope at 1550 nm is less then about 0.042

ps/nm^2/km (paragraph 0013), a cable cutoff of less than 1240 nm (paragraph 0014), a

transmission loss at 1550 nm of less than about 0.2 dB/km (paragraph 0016), the

difference between transmission loss at 1550 nm and at 1310 nm being between 0.1 to

0.4 (from the values in paragraph 0017), polarization mode dispersion at 1550 nm of

less than about 0.04 ps/km$^{1/2}$ (paragraph 0018), a core outer diameter of between 6 and

10 μm (paragraph 0024), a refractive index difference between the core and cladding of

between 0.1% to 0.6% (from the values in paragraphs 0023 and 0030, which is the

difference between the core and the outer cladding), loss due to OH induced water

peaks at 1380 nm being virtually eliminated (paragraph 0112), a measured zero

dispersion wavelength of between 1308 and 1316 nm (Table 2) and a dispersion slope

at 1400 nm (which is in the preferable zero dispersion wavelength range (0010)) of

0.037 to 0.039 ps/nm^2/km (Table 2).

Bickham does not teach expressly an exact range of transmission loss of

between 0.28 to 0.32 dB/km at 1310 nm.

Bickham teaches attenuation in a range around 0.4 dB/km as previously

discussed.

At the time the invention was made, it would obvious to a person of ordinary skill in the art to achieve low transmission ranges. Applicant has not disclosed that an exact range of 0.28 to 0.32 dB/km provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the fiber taught by Bickham because of the low transmission taught that overlaps applicant's claimed range.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been reduce the need for amplifiers and/or repeaters along the transmission line by being able to reduce losses in the line.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over the

combination of **Jameson et al (US 6,301,426 B1)** (Jameson) and **Nagayama et al (US**

2002/0044753 A1) (Nagayama) with further teachings by **Chraplyvy et al (US**

6,205,268 B1) (Chraplyvy).

Jameson teaches a standard silica single-mode fiber known in the art having a

mode field diameter of 9.3 +/- 0.5 µm at 1310 nm (column 2 lines 61-63).

Jameson does not teach expressly a Rayleigh scattering coefficient value.

Nagayama teaches that the Rayleigh scattering coefficient value of a standard

silica fiber being about 0.85 dB/km*µm^4 (paragraph 0023).

Nagayama does not teach expressly the mode field diameter of such standard

fiber.

Jameson and Nagayama are analogous art because they are from the same field

of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary

skill in the art that standard, known fibers in art typically have the mode field diameter

and Rayleigh scattering coefficient value taught by Jameson and Nagayama and

therefore would recognize that a silicon fiber with such mode field diameter would also

have the Rayleigh scattering coefficient in the range taught by Nagayama since this

value is a basic phenomenon is proportional to 1/wavelength of the light in the fiber and

cannot be eliminated (Chraplyvy, column 6 lines 61-67).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by

the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257,

191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed.

Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are

disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA

1955). "The normal desire of scientists or artisans to improve upon what is already

generally known provides the motivation to determine where in a disclosed set of

percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406

F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle,

see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843

(Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d

1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir.

1997).

The motivation for doing so would have been to transmission losses in the fiber

(Chraplyvy, column 6 lines 57-61; Nagayama, paragraph 0022).

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Bickham as applied to claim 21-27, 30-37, 40-43, 46 and 49 above, and further in view

of **Sasaoka et al (US 6,345,140 B1)** (Sasaoka).

Bickham teaches the fiber previously discussed.

Bickham does not teach expressly the value of the Petermann-I mode field

diameter.

Sasaoka teaches that the Petermann-I mode field diameter is related to the mode field diameter by the known equations 1a and 1b (column 1 lines 52-59).

Bickham and Sasaoka are analogous art because they are from the same field of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the fiber taught by Bickham will have a Petermann-I mode field diameter less than 10µm using the equations provided by Sasaoka since Bickham teaches a mode field diameter at 1550 nm of 7.5 to 7.7 µm (Table 2).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

The motivation for doing so would have been to have a better way to described the mode field diameter of the fiber while including the relationship of the electric field amplitude and a positional variable (Sasaoka, column 1 lines 52-65).

Claims 38-39, 44-45 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bickham as applied to claim 21-27, 30-37, 40-43, 46 and 49 above, and further in view of **Kato et al (US 6,266,467 B1)** (Kato).

Bickham teaches the fiber previously discussed.

Bickham does not teach expressly the cladding doped with fluorine.

Kato teaches a fiber having a fluorine-doped cladding (column 27 lines 4-17).

Bickham and Kato are analogous art because they are from the same field of endeavor, optical fibers.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to dope the cladding with fluorine since Bickham teaches it is known to diffuse dopants during manufacturing to round the corners of index profiles of his invention (paragraph 0127).

The motivation for doing so would have been to be able to enhance refractive index differences between layers will still allowing relatively easy manufacturing methods (Kato, column 27 lines 15-17).

Allowable Subject Matter

Claim 28 is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject

matter: This claim would be allowable over the prior art of record if rewritten in

independent form including all of the limitations of the base claim and any intervening

claims because the latter, either alone or in combination, does not disclose nor render

obvious an optical fiber mainly comprising silica glass having the combination of

numerical property limitations giving the claims 21, 22 and 28, in combination with the

rest of the claimed limitations.

Response to Arguments

Applicant's arguments filed 6/26/07 have been fully considered but they are not

persuasive.

In response to the argument that Jameson does not teach the claimed

transmission loss in the claimed range of the MFD: As stated in the rejection, Jameson

teaches a mode field diameter of 9.3 +/- 0.5 μm at 1310 nm (column 2 lines 62-63),

which is in the claimed range and a low attenuation loss of less than 0.4 dB/km, which

overlaps the claimed range. Further, applicant states the claimed ranges are for

compatibility with a SMF standard. This further supports the finding of obviousness

since it is common practice to design fibers to meet industry standards.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

In response the argument that Bickham provides no factual basis that the transmission loss can be in the range of 0.25 to 0.32 dB/km: First, the claimed range is 0.28 to 0.32 dB/km, not 0.25 to 0.32 dB/km. As stated in the rejection, Bickham teaches a transmission loss that is preferably less than 0.4 dB/km at 1310 nm (paragraph 00017), which overlaps the claimed range.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed.

Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are

disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA

1955). "The normal desire of scientists or artisans to improve upon what is already

generally known provides the motivation to determine where in a disclosed set of

percentage ranges is the optimum combination of percentages."); In re Hoeschele, 406

F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent cases applying this principle,

see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843

(Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d

1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir.

1997).

In response to the argument that Nagayama does not teach of mode field

diameter in the claimed range: In response to applicant's arguments against the

references individually, one cannot show nonobviousness by attacking references

individually where the rejections are based on combinations of references. See In re

Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091,

231 USPQ 375 (Fed. Cir. 1986). The Nagayama reference is brought in the show that

the Rayleigh scattering coefficient value of a standard silica fiber (to which Jameson

teaches, with a mode field diameter of 9.3 +/- 0.5 μm at 1310 nm (column 2 lines 61-

63), which overlaps the claimed range) being about 0.85 dB/km*μm^4 (paragraph 0023).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by

the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257,

191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed.

Cir. 1990). Further, it has been held that "[W]here the general conditions of a claim are

disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA

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see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843

(Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d

1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir.

1997).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

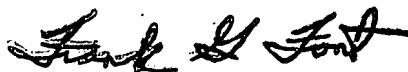extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-Th 7:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RAL/
Ryan Lepisto
Art Unit 2883

Frank Font
Supervisory Patent Examiner
Technology Center 2800